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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/588,497	08/04/2006	Takashi Niidome	H&C-5458	9221

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EXAMINER
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STIMPert, PHILIP EARL

ART UNIT	PAPER NUMBER
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3746

MAIL DATE	DELIVERY MODE
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10/05/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/588,497	<b>Applicant(s)</b> NIIDOME ET AL.	
	<b>Examiner</b> Philip Stimpert	<b>Art Unit</b> 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 August 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/4/06</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 5-9 are objected to because of the following informalities: in general, the nomenclature of "one of said supply/discharge passages" and "the other one" is awkward. The examiner suggests reciting first and second ones of the passages, and reciting the associated elements similarly. In particular, various formulations dependent on this nomenclature are grammatically incorrect, i.e. "an another throttle" in claim 6, line 7, and "another discrete throttles" in the third to last line of claim 7. Appropriate correction is required.
2. The examiner notes that "said branched oil passages" in claim 9, lines 9-10, appears to be associated with the second ("another") branched oil passages, rather than as recited. Correction or clarification is required.
3. Claim 11 is objected to because of the recitation of "a tilting movements" in lines 5-6.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 1-3 and 5-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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6. Regarding claim 1, the limitations of "said first and second slide bearings" lack antecedent basis in the claim.
7. Regarding claim 7, the limitation in the third to last line of "the other oil passages" lacks antecedent basis in the claim.
8. Regarding claim 8, the limitations of "said one supply/discharge passage" and "said the other supply/discharge passage" lack antecedent basis in the claim, since claim 8 depends directly from claim 1.
9. Regarding claim 9, the limitations of "the other common throttle," lacks antecedent basis.

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1-3 and 5-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,048,176 to Deininger (Deininger) in view of US Patent 4,543,876 to Heyl et al. (Heyl hereafter)
12. Regarding claim 1, Deininger teaches a swash plate type variable displacement hydraulic machine (1) comprising a tubular casing (see Fig. 1) having at one end a swash plate support portion (left of 5), and at the other end a pair of supply/discharge passages (see Fig. 1), a rotational shaft (along 22) rotatably supported in the casing, a

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cylinder block (see Fig. 1) having a plural number of axially extending cylinders and pistons, the pistons each being attached by a projecting end to a respective piston shoe and engaging a smooth front surface of the swash plate (5). Deininger also teaches a tilting actuator (2) which drives the swash plate (5) into a tilted position according to a tilting pressure (col. 3, ln. 20). Deininger does not teach swash plate legs or hydrostatic bearings. Heyl teaches another hydraulic rotary machine, and teaches particularly a swash plate having legs engaging hydrostatic bearings (29, 30, 37, 38, as shown in Fig. 2) and being tilted according to a tilting control pressure (col. 4, ln. 46-60). Heyl teaches that the hydrostatic bearings will keep contacting surfaces of the leg portions in a lubricated state via their communication with the supply/discharge passages. As shown in Fig. 4, Heyl teaches that the hydrostatic bearing constitutes first (29) and second (30) main hydrostatic bearings on first and second leg portions respectively, and first (38) and second (37) auxiliary hydrostatic bearings arranged as claimed. Finally, the surface area of the legs to the outside of the hydrostatic bearings forms a set of slide bearings which is more radially distant from the shaft than the hydrostatic bearings. Heyl teaches that this system of hydrostatic bearings provides noise and oscillation damping to a tilting plate hydraulic machine (col. 3, ln. 16-30). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the installation of Deininger with a swash plate and bearings as taught by Heyl in order to provide noise and oscillation damping, and to provide an alternate embodiment of a tilting swash plate.

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13. Regarding claim 2, the examiner notes the breadth of the term "vicinity."

Inasmuch as the main hydrostatic bearings act upon the swash plate, they are considered to be in the vicinity of the recited resultant forces.

14. Regarding claim 3, as taught by Heyl and provided to Deininger, the swash plate (3) has a through hole between the leg portions into which the shaft is inserted, which while not shown in Heyl, one of ordinary skill in the art would expect to have a gap therearound as shown in Deininger (Fig. 1). Further, the main hydrostatic bearings of Heyl have a larger effective surface area (as shown in Fig. 4) and are closer to the through hole.

15. Regarding claim 5, as taught by Heyl, the first main and auxiliary bearings are communicated with one of the supply/discharge passages via a first oil passage (41), while the second main and auxiliary passages communicate via a second oil passage (42).

16. Regarding claim 6, as taught by Heyl, the diameters of the passages (41, 42) inherently constitutes a throttle common to the first main and auxiliary bearings on one side, and to the second bearings on the other. These throttles will adjust, i.e. limit, an amount of pressure oil which can be supplied to the bearings.

17. Regarding claim 7, as taught by Heyl, the diameters of the secondary passages leading from the main passages (41, 42) to the bearing pockets impose separate and discrete limits on flows to each particular bearing, thus providing throttles as claimed.

18. Regarding claim 8, as shown in Fig. 4 of Heyl, each oil passage (41, 42) has smaller passages branching therefrom to each of the hydrostatic bearings respectively.

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Since these are along an extent of the passage leading away from the point at which each passage communicates with the supply/discharge lines (left for 41, right for 42), they are deemed to satisfy the language of the claim.

19. Regarding claim 9, as discussed above, the diameters of the main oil passages (41, 42) and of the secondary passages connecting the main passages to the bearing pockets each constitute their own respective throttling constraint on the pressure oil supplied to the bearing system.

20. Regarding claim 10, Heyl teaches that either of the supply/discharge passages may be a feed line (col. 2, ln. 11-20), which one of ordinary skill in the art would appreciate implies that the swash plate must be displaceable in either angular direction from its zero point.

21. Regarding claim 11, Deininger teaches a regulator (2) in the form of a servo valve (24) having a spool (25) within a control sleeve (26) adapted to supply the tilting control pressure (col. 3, ln. 20) to the tilting actuator in response to an external command signal (col. 6, ln. 28-29), and a feedback mechanism (33) adapted to feed back the control sleeve of the regulator according to a tilting movement of the swash plate, where the feedback mechanism comprises a conversion mechanism (33) which converts tilting movements of the swash plate (5) into axial displacement indicative of the swash plate position, and a displacement transmission member (70) located between the conversion mechanism and the control sleeve (26) to transmit the axial displacement to the control sleeve.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Philip Stimpert whose telephone number is (571)270-1890. The examiner can normally be reached on Mon-Fri 7:30AM-4:00PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/  
Supervisory Patent Examiner, Art  
Unit 3746

/P. S./  
Examiner, Art Unit 3746  
30 September 2009